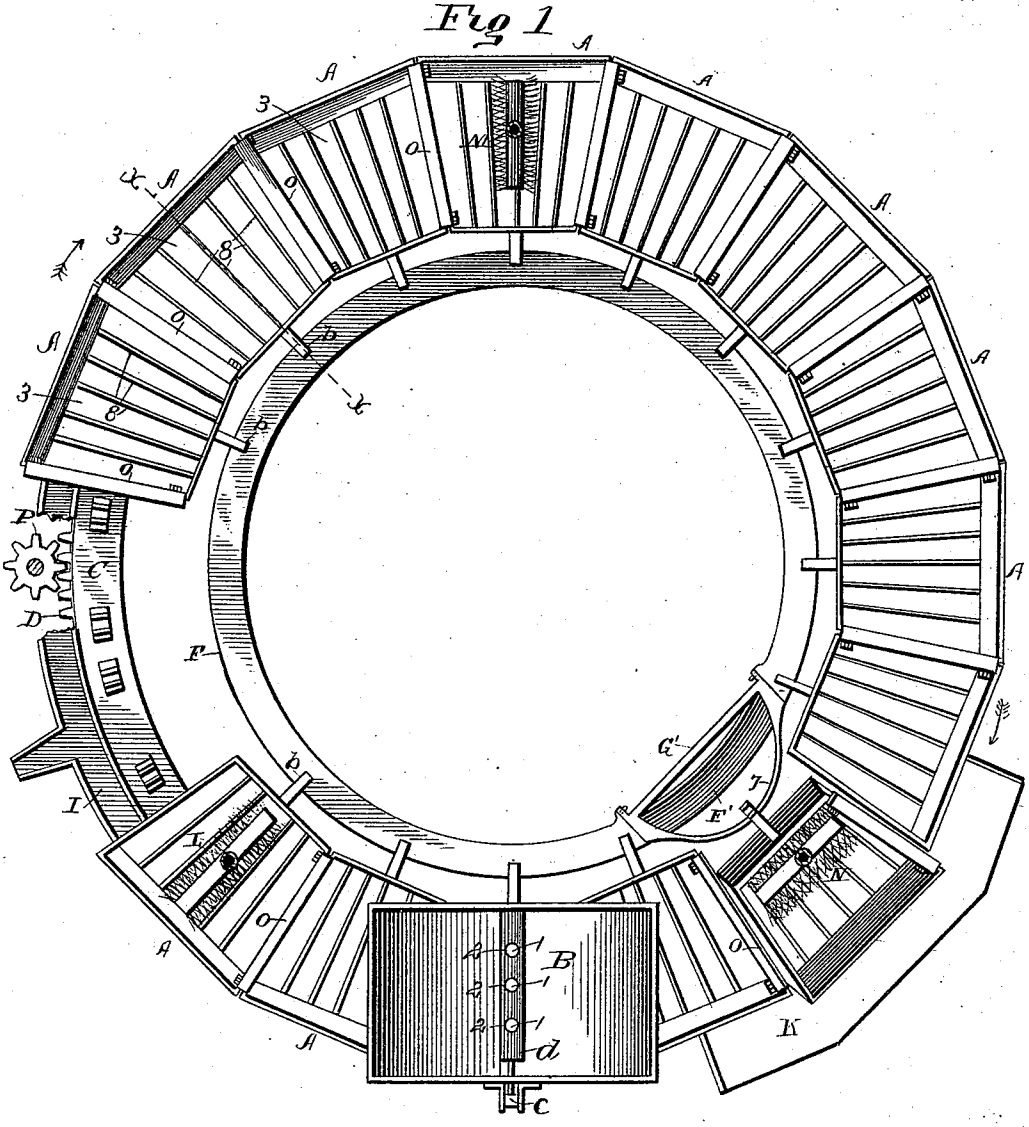
(No Model.) 2 Sheets—Sheet 1.

P. L. GIBBS.

ORE LEACHING MACHINE.

No. 456,323. Patented July 21, 1891.

Fig 1



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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No. 456,323. Patented July 21, 1891.

Fig 2

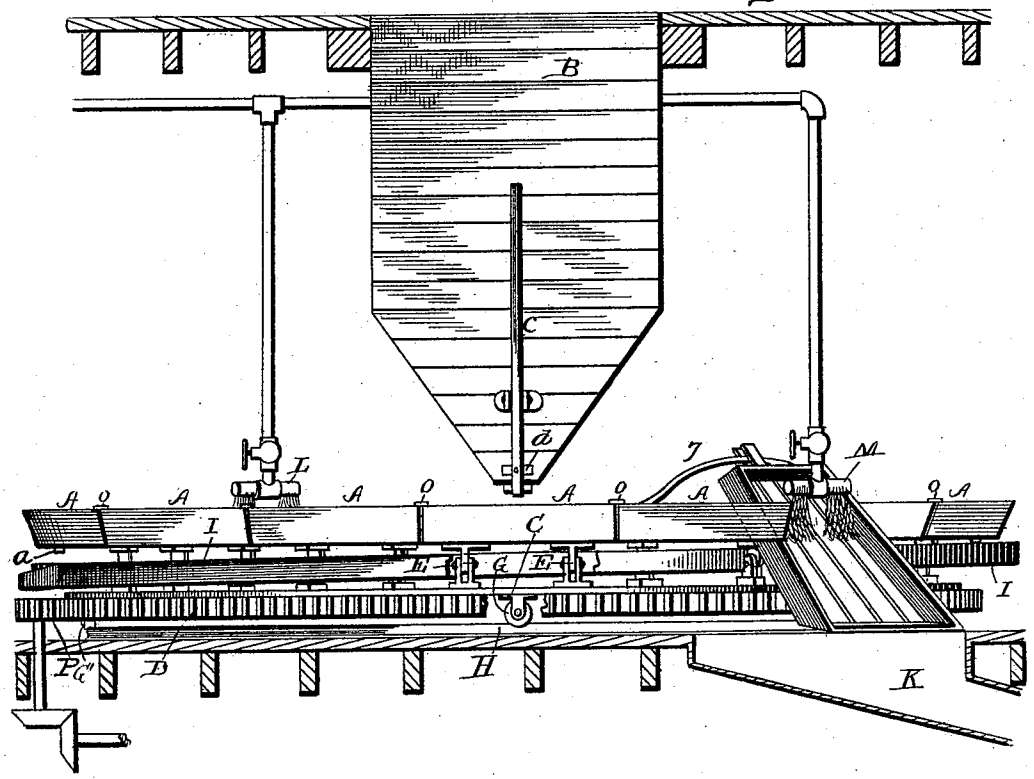


Fig 3

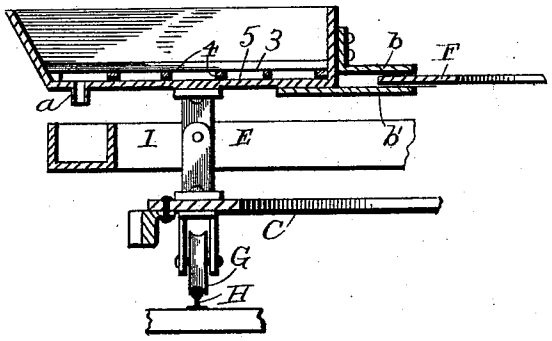
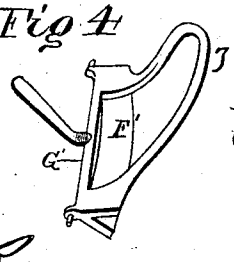


Fig 4



Witness
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UNITED STATES PATENT OFFICE.

PIERRE L. GIBBS, OF CLINTON, IOWA.

ORE-LEACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,323, dated July 21, 1891.

Application filed January 7, 1891. Serial No. 377,029. (No model.)

To all whom it may concern:

Be it known that I, PIERRE L. GIBBS, a citizen of the United States, residing at Clinton, in the county of Clinton and State of Iowa, have invented certain new and useful Improvements in Ore-Leaching Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention has reference to ore-leaching machines in which a rotating annular series of ore-receptacles pass successively under an ore-vat containing the crushed ore in a solution to receive their respective contents or to be otherwise filled and to discharge the filtrate during their transit into a suitably-placed discharging conduit or launder and at a predetermined point in their orbital movement and automatically discharge the residuum.

The objects of my improvement are, first, to provide a suitably-suspended vat to receive the ore in a solution or dry or roasted ore and adapted by suitable openings in the bottom thereof to optionally discharge said contents; second, to provide a series of leaching-vats to pass successively under said primary vat and respectively receive from the latter a proper quantity of its contents; third, to provide suitable mechanism for supporting and progressing said secondary vats; fourth, to provide a conduit or launder to receive and carry off the filtrate from said leaching or secondary vats, and, fifth, to afford facilities to automatically discharge the residuum from said leaching-vats preparatory to their refilling. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan of my invention. Fig. 2 is an elevation thereof, partly in section. Fig. 3 is a partial cross vertical section in the line *x x* of Fig. 1. Fig. 4 is a detail of the automatic trip for discharging the residuum aforesaid.

Similar letters refer to similar parts throughout the several views.

B is the primary vat, suitably suspended from an upper floor or its equivalent and adapted to receive the ore in a solution, which can be delivered into its upper end in any suitable mode. The bottom of the vat B has a converging bottom, and at its lower extremity is provided with a transverse series of openings 1, adapted to be optionally opened or closed by a transverse slide *d*, having a corresponding series of openings 2, adapted to register with the openings 1 and operated by a lever *c* or other suitable means.

A A are an annular series of leaching-vats supported centrally respectively upon a transverse hinge E, seated upon a circular plate C, which latter is provided on its lower surface with a sufficient number of peripherally-grooved carrying-wheels G, adapted to be supported upon and traverse a circular track H. Near the bottom of each vat A is placed the leaching-cloth 3, of any suitable quality, supported a proper distance above the bottom of said vat by transverse strips 4, provided with transverse openings, thus permitting the filtrate to collect between the leaching-surface 3 and the permanent bottom 5 of the vat A and escape from the latter through the exit *a*.

A suitable stationary discharging-launder I, of a curved formation, extends entirely around under the vats A, having its highest elevation at one central locality and descending therefrom in opposite directions to its point of discharge.

An upper engaging plate *b* and lower one *b'* are attached to the inner end of each vat A, near the bottom thereof, and extend inwardly horizontally to inclose between them the outer edge of a circular plate F, suitably supported horizontally to afford in the rotation of the vats A means for retaining said vats in their normal position. In one portion of the plate F is located a rock-shaft G', provided with the outwardly-extending normal guide-surface F' and an inwardly and outwardly extending bow 7. The purpose of this provision is to optionally rock the segment F' into the same plane as the plate F, so as to make the latter contiguous, or to rock said

segment below the plane of said plate and substitute in said interval the bow 7, which by engaging and raising the projections b' b' will tilt the vat A outward when it is desired to discharge the residuum therefrom, as shown in Fig. 3.

To assist in holding the strainer 3 in position, there is suitably fastened over the upper surface thereof the longitudinal slats 8.

The plate C is provided peripherally with the external gear D, adapted to be engaged and actuated by the pinion P, the latter being driven in any suitable mode.

L and M are liquid-dischargers suspended at suitable intervals above the line of transit of the vats A, and are intended to afford means of discharging liquid of any character into the contents of the vats A during the process of leaching, and N is a similar liquid-discharger suspended over the point of discharge of the residuum to assist in washing out the latter when the vat A is in the tilted position shown in Fig. 3.

K is a discharge-trough suitably placed under the point of said discharge and adapted to receive and carry off the residuum aforesaid.

A joint-cover O is suitably hinged on the side of each vat A in position to extend over the adjacent side of the next succeeding vat, and thus preclude a dropping of the material from the vat B between the vats A or on the edges thereof in the passage of the vats A under the vat B. The cover O is preferably placed on that side of the vats A which is last to approach the vat B, so that the tilting vat may raise and hold edgewise the cover O on the preceding vat and carry upward its own cover.

The operation of my invention is as follows: After the ore is crushed and put in the solution, either originally in the vat B or transferred thereto from other vessels, the power is applied to the gear D through the medium of the pinion P, and the vats A thereby rotated in succession under the vat B, receiving in transit from the latter such amount of its contents as may be desired, and during the cycle of rotation of each vat the filtrate is permitted to escape into and through the conduits or launder I. Sometimes it is advantageous to introduce some peculiar solution during the process of leaching into the mass within the vats A, and this can be delivered through the inlets L or M, or said inlets may be utilized to furnish additional water. The vats A may be constructed to contain such quantity as may be desired, and the rapidity of movement of said vats may be varied at will. If one cycle of rotation of the vats A shall sufficiently exhaust the filtrate, the bow 7 can be adjusted to engage the projections b and b' at each revolution of the vats A, and thereby automatically discharge the residuum therefrom in succession, or if more than one revolution be desired the movable segment F' can be thrown into the interval otherwise occupied by the bow 7, and thus complete the continuity of the plate F until such time as it may be desired to discharge the residuum as aforesaid, egress of the contents of the vat B being meanwhile suspended by closing the openings 1 therein. As the launder I extends entirely around the circular vats A, the leaching may proceed even while said vats are stationary. As the hinge E is under the center of gravity of the vats A, but one track is required, and the automatic tilting of the vats made feasible without intermitting their support on said track.

Any number of vats A may be used, and my invention may be applied to any operation in which leaching or filtering is involved. The vats A may be loaded by hand and the vat B be dispensed with.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination of a movable plate C, suitably supported upon carrying-wheels G and provided with a gear D, a positively-driven pinion P, engaging said gear, a series of leaching-vats A, pivotally seated on said plate and provided with a suitably-supported filtering-surface 3 and with transverse strips 4, having transverse openings, and with exit a and a launder I, placed beneath and in the line of movement of said vats in position to receive the filtrate therefrom, substantially as shown, and for the purpose described.

2. The combination of a movable plate C, suitably supported upon carrying-wheels G and provided with a gear D, a rotating pinion P, adapted to engage and actuate said gear, a series of leaching-vats A, pivotally seated on said plate and provided with a filtering-surface 3 and filtrate-discharge a and with projections b and b', a launder I, placed beneath and in the line of movement of said vats in position to receive the filtrate therefrom, and plate F, provided with bows 7 in the path of said vats for automatically discharging the residuum from said vats, for the purpose specified.

3. The combination of the plate C, provided with external gear D and suitably supported and carried upon a track, means for rotating said gear and plate, a series of leaching-vats A, pivotally seated on plate C and provided with projections b and b', plate F, adapted to be engaged by said projections, the launder I, seated beneath said vats, and bows 7 in plate F, adapted to tilt said vats and discharge the remaining contents thereof, substantially as shown, and for the purpose described.

4. The combination of the plate C, movably supported, a series of leaching-vats A, each provided with a leaching-surface 3 and opening a and pivotally seated on said plate, a stationary vat B, placed in position to discharge its contents successively into said vats

A, a gear D, formed on said plate C, a rotating pinion P, adapted to engage and actuate said gear, a launder I, placed under and in position to receive the filtrate from said vats during their movement, means, substantially as shown, for automatically tilting said vats, and liquid-dischargers L, M, and K, suitably supported above the line of movement of said vats, substantially as shown, and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

PIERRE L. GIBBS.

Witnesses:

JOHN G. MANAHAN,

ADDA E. WARD.